

REMARKS

Claims 1-7 have been rejected under 35 U.S.C. § 112, second paragraph.

Claim 3 has been amended to obviate the antecedent basis problem. The Examiner's remaining rejections are respectfully traversed.

The claims are directed to an automatic pipetting system having a pipetting chamber with a U-shaped ledge. A pipetting magazine has been adapted for insertion into and removal from an operative position on the ledge inside the chamber.

There are many different types of racks for supporting pipette tips, however, most of them are simply used to store the pipette tips or to transfer the tips from one place to another. Most of the magazines or racks are not strong enough to be used in an automated pipetting system. In the automated system, if the magazine deflects more than a miniscule amount, the seal will be broken and the amounts of pipetted material will not be accurate.

Previously as disclosed in the specification, the only magazines strong enough to withstand the pressures of an automated pipetting system without flexing have been steel magazines. The steel magazines were rigid enough to resist deflection during the pipetting process. However, as the magazines are very expensive, the magazines had to be reused and thus someone had to take the time to refill the individual magazines with pipettes. The Applicants' however, have found that a plate or magazine could be molded from a polymeric resin. It is not possible to use just any polymeric resin. The resin has to have a specific stiffness such that a downward force of 1,000 Newtons applied to the inner region of the plate would cause a downward deflection at the geometric center of not more than 0.51mm. The defined force is that typically applied across the pipettes, i.e. the force applied across the inner region, when the automated pipetter comes into contact with the pipette tips.

The magazine is generally rectangular. If one draws a line from one corner of the magazine to the opposing corner and does the same from the other set of opposing corners, the point where the lines cross is the approximate geometric center of the magazine.

The Examiner has questioned the structural definition to discern between the edge and the inner region of the plate. As illustrated in Figures 1 and 3 and described on page 3 of the specification, the present invention includes the following:

[T]he magazine 10 has a generally rectangular configuration having a front edge 12a, side edges 12b, 12c and a rear edge 12d surrounding an inner region 14. The edges 12b, 12c and 12d are undercut as at 13 to be supported on the ledge of the chamber. The inner region 14 has an array of through openings 16 for receiving and retaining pipette tips.

The Applicants do not understand the Examiner's rejection. Generally the edges are the area which includes the undercut and the inner region includes the remaining portion which encompasses the array of openings to hold the pipettes. Thus, the edges and the inner region merge together. The U-shaped ledge mentioned by the Examiner is that shown at 11 in Figure 6 and is described on page 3 beginning at line 15. The edges of the magazine are not the same as the ledge 11 of the chamber.

Claims 1 and 5 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Taggart, U.S. Patent No. 5,882,603; claims 1 and 5 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Rainin, U.S. Patent No. 4,577,760; and claims 1 and 5 have also been rejected under 35 U.S.C. § 102(b) as being anticipated by Stolp, U.S. Patent No. 5,630,988.

The Examiner's rejections are respectfully traversed.

The Examiner has cited various pipette tip racks and apparatuses for mounting and transferring pipette tips. None of the pipette tip holders are adapted for insertion into and removal from an operative position of the automated pipetting system. Most importantly, none of the pipette tip holders would be able to withstand a downward force of about 1,000 Newtons without producing a downward deflection of the geometric center of 0.51mm or less.

In Taggart '603, the pipette tip holder may be made out of a variety of materials including plastics, metals, ceramics and combinations of such materials depending on the particular use. There are multiple support members 32 along the length of the box, as seen in the figures, to support the tip holder so that the holder does not bow down, warp or otherwise move out of place. There is no discussion that the holder may be used in an automatic pipetting system and thus there is no requirement or need to construct a tip holder that can withstand the force used in an automated pipette system. In fact Taggart teaches just the opposite, that in order to avoid deflection one needs to use additional support members underneath the central portion of the holder. Thus, the Applicants' invention is not obvious in view of Taggart.

In Rainin '760, there is a statement that the rack may be made of a polypropylene material so that it can withstand sterilization at high temperatures and pressures. Again, there is no description that the apparatus could withstand the required forces on the magazine required of that used in an automated pipetting system such that there is minimal deflection.

In Stolp '980, the tip holder may be made of a pressure-resistant durable plastic, such as molded polypropylene. Again, there is no teaching that this assembly can withstand the pressure of an automated pipetting system and avoid deflecting which causes error in the test procedures.

Thus, the Applicants' invention is not obvious in view of Rainin '760 or Stolp '980.

Claims 2, 6 and 7 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Taggart '603 as applied to claims 1 and 5 above, and in view of Stolp '980 and Weast et al. (1984); claims 3 and 4 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Taggart in view of Stolp and Weast et al. (1984) as applied to claims 1-2 and 5-7 above and further in view of Marrocco, III et al., U.S. Patent No. 6,087,467; claims 2-4, 6 and 7 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Stolp as applied to claims 1 and 5 above, and further in view Weast et al. (1984) and Marrocco, III et al., U.S. 6,087,467.

The Examiner's rejections are respectfully traversed.

As independent claim 1 is patently distinguishable from the prior art references, the remaining claims dependent therefrom are also patently distinguishable.

In view of the foregoing, it is believed that the amended claims and the claims dependent there from are in proper form. The Applicants respectfully contend that Taggart '603, Rainin '760 and Stolp '980 do not anticipate the claimed invention under the provisions of 35 U.S.C. § 102(b). The Applicants also respectfully contend that the teachings of Taggart '603 in view of Stolp '980 and Weast et al. (1984) and further in view of Marrocco, III et al. '467 do not establish a *prima facie* case of obviousness under the provisions of 35 U.S.C. §103(a). Thus, claims 1-7 are considered to be patently distinguishable over the prior art of record.

Attached hereto are marked-up and clean copies of the specification along with a clean copy of the claims as amended.

The application is now considered to be in condition for allowance, and an early indication of same is earnestly solicited.

Respectfully submitted,



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Extension 110

Fig. 6 is a schematic illustration of a pipetting system and its arronated pipette tip magazine.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

5 A preferred embodiment of a pipette tip magazine in accordance with the present invention is generally depicted at 10 in the accompanying drawings. As shown somewhat schematically in Figure 6, the magazine 10 is adapted for insertion into the pipetting chamber "C" of an automated pipettor. The chamber has a generally U-shaped ledge configured to support the magazine in an operative pipetting position, as well understood by those skilled in the art. The magazine 10 has a
10 generally rectangular configuration having a front edge 12a, side edges 12b, 12c and a rear edge 12d surrounding an inner region 14. The edges 12b, 12c and 12d are undercut as at 13 to be supported on the ledge of the chamber. The inner region 14 has an array of through openings 16 for vertically receiving and retaining pipette tips. A handle 18 protrudes from the front edge 12a to facilitate manual placement and removal of the magazine in the pipetting chamber C.

15 It has been found that the magazine 10 can be molded from a polymeric resin with sufficient inherent stiffness such that when the magazine is supported in its operative position on [edge 11] ledge 11, a downward force of up to approximately 1000 Newtons exerted on the inner region 14 will cause less than .51 mm of deflection, but preferably less than .38 mm of deflection at the point of force application, assuming the magazine was substantially flat when molded. Preferably, the
20 polymeric resin will comprise a polycarbonate, which may include a filler such as glass fiber. The percentage of glass fiber to the polymeric material is preferably in a range of approximately 20 to 40 weight percent. Because the magazine is molded from a filled polymeric resin, it is

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15 It has been found that the magazine 10 can be molded from a polymeric resin with sufficient inherent stiffness such that when the magazine is supported in its operative position on ledge 11, a downward force of up to approximately 1000 Newtons exerted on the inner region 14 will cause less than .51 mm of deflection, but preferably less than .38 mm of deflection at the point of force application, assuming the magazine was substantially flat when molded. Preferably,
20 the polymeric resin will comprise a polycarbonate, which may include a filler such as glass fiber. The percentage of glass fiber to the polymeric material is preferably in a range of approximately 20 to 40 weight percent. Because the magazine is molded from a filled polymeric resin, it is